The claims:

1. (previously presented) Apparatus for providing bandwidth management services for a user in an optical communication system, comprising:

an optical service agent including:

a user-to-network interface (UNI) for interfacing with an optical communication network in which data is processed and transported only in optical form;

a peer-to-peer interface for interfacing with peer users; and

optical service logic for interacting with the optical communication network via the UNI and with the peer users via the peer-to-peer interface for providing said bandwidth management services for the user, including provision of a new optical communication path between specified nodes in the optical communication network; and

an optical service server operative to authenticate the user, obtain network topological information, and to employ the network topological information on behalf of the optical service agent for providing bandwidth management services such that the network topological information is not exposed to the user.

2. (original) The optical service agent of claim 1, wherein the optical communication network comprises an automatically switched optical/transport network (ASON), and wherein the UNI comprises an ASON UNI.

3. (original) The optical service agent of claim 1, wherein the optical service logic comprises:

bandwidth monitoring logic for monitoring bandwidth utilization on a connection.

4. (original) The optical service agent of claim 1, wherein the optical service logic comprises:

bandwidth controlling logic for controlling bandwidth utilization on a connection.

5. (original) The optical service agent of claim 1, wherein the optical service logic comprises:

bandwidth obtaining logic for obtaining additional bandwidth for a connection.

6. (original) The optical service agent of claim 1, wherein the optical service logic comprises:

bandwidth relinquishing logic for relinquishing excess bandwidth for a connection.

7. (original) The optical service agent of claim 1, wherein the optical service logic comprises:

bandwidth allocation logic for allocating bandwidth among multiple connections.

8. (original) The optical service agent of claim 4, wherein the bandwidth controlling logic is operably coupled to prevent bandwidth utilization on the connection from exceeding a predetermined maximum bandwidth utilization.

9. (original) The optical service agent of claim 5, wherein the bandwidth obtaining logic is operably coupled to obtain the additional bandwidth for the connection upon determining that bandwidth utilization on the connection exceeds a predetermined level.

10. (original) The optical service agent of claim 6, wherein the bandwidth relinquishing logic is operably coupled to relinquish excess bandwidth for the connection upon determining that bandwidth utilization on the connection is below a predetermined level.

11. (original) The optical service agent of claim 7, wherein the bandwidth allocation logic is operably coupled to identify an over-utilized connection and an under-utilized connection and to transfer traffic from the over-utilized connection to the under-utilized connection.

12. (previously presented) A device comprising:

a user application requiring communication services from an optical communication network in which data is processed and transported only in optical form; and

an optical service agent for communicating with the optical communication network and providing optical communication network bandwidth management services for the user application, including provision of a new optical communication path between specified nodes in the optical communication network; and

an optical service server operative to authenticate the user application and to obtain network topological information which is employed on behalf of the optical service agent for providing bandwidth management services such that the network topological information is not exposed to the user application.

13. (original) The device of claim 12, wherein the optical service agent comprises:

a user-to-network interface (UNI) for interfacing with the optical communication network;

a peer-to-peer interface for interfacing with peer users; and optical service logic for interacting with the optical communication network via the UNI and with the peer users via the peer-to-peer interface for providing said bandwidth management services for the user application.

14. (original) The device of claim 13, wherein the optical communication network comprises an automatically switched optical/transport network (ASON), and wherein the UNI comprises an ASON UNI.

15. (original) The device of claim 13, wherein the optical service logic comprises:

bandwidth monitoring logic for monitoring bandwidth utilization on a connection.

16. (original) The device of claim 13, wherein the optical service logic comprises:

bandwidth controlling logic for controlling bandwidth utilization on a connection.

17. (original) The device of claim 13, wherein the optical service logic comprises:

bandwidth obtaining logic for obtaining additional bandwidth for a connection.

18. (original) The device of claim 13, wherein the optical service logic comprises:

bandwidth relinquishing logic for relinquishing excess bandwidth for a connection.

19. (original) The device of claim 13, wherein the optical service logic comprises:

bandwidth allocation logic for allocating bandwidth among multiple connections.

20. (original) The device of claim 16, wherein the bandwidth controlling logic is operably coupled to prevent bandwidth utilization on the connection from exceeding a predetermined maximum bandwidth utilization.

21. (original) The device of claim 17, wherein the bandwidth obtaining logic is operably coupled to obtain the additional bandwidth for the connection upon determining that bandwidth utilization on the connection exceeds a predetermined level.

22. (original) The device of claim 18, wherein the bandwidth relinquishing logic is operably coupled to relinquish excess bandwidth for the connection upon determining that bandwidth utilization on the connection is below a predetermined level.

23. (original) The device of claim 19, wherein the bandwidth allocation logic is operably coupled to identify an over-utilized connection and an underutilized connection and to transfer traffic from the over-utilized connection to the under-utilized connection.

24. (previously presented) A system comprising:

an optical communication network in which data is processed and transported only in optical form;

a first network user coupled to the optical communication network, wherein the first network user comprises an optical service agent for obtaining optical communication services from the optical communication network via a user-to-network interface (UNI) communicating with the optical communication network and for providing bandwidth management services for the first network user, including provision of a new optical communication path between specified nodes in the optical communication network; and

an optical service server operative to authenticate the first network user and to obtain network topological information which is employed on behalf of the optical service agent for providing bandwidth management services such that the network topological information is not exposed to the first network user.

25. (original) The system of claim 24, wherein the optical communication network comprises an automatically switched optical/transport network (ASON), and wherein the UNI comprises an ASON UNI.

26. (original) The system of claim 24, wherein the optical service agent is operably coupled to monitor bandwidth utilization on a connection.

27. (original) The system of claim 24, wherein the optical service agent is operably coupled to control bandwidth utilization on a connection.

28. (original) The system of claim 24, wherein the optical service agent is operably coupled to obtain additional bandwidth for a connection.

29. (original) The system of claim 24, wherein the optical service agent is operably coupled to relinquish excess bandwidth for a connection.

30. (original) The system of claim 24, wherein the optical service agent is operably coupled to allocate bandwidth among multiple connections.

31. (previously presented) A method for managing bandwidth for a user in an optical communication system in which data is processed and transported only in optical form, the-method comprising:

monitoring bandwidth utilization by an optical service agent in the user on a connection in the optical communication system;

controlling bandwidth utilization by an optical service agent in the user on a connection in the optical communication system;

obtaining additional bandwidth by an optical service agent in the user for a connection in the optical communication system, including provision of a new optical communication path between specified nodes in the optical communication system;

relinquishing unused bandwidth by an optical service agent in the user for a connection in the optical communication system; and

allocating bandwidth by an optical service agent among multiple connections in the optical communication system,

prior to which an optical service server executes the following steps:

authenticating the user;

obtaining network topological information; and

employing the network topological information on behalf of the optical service agent to provide bandwidth management services such that the network topological information is not exposed to the first network user.

32. (original) The method of claim 31, wherein controlling bandwidth utilization on a connection comprises:

monitoring bandwidth utilization on the connection;

determining that the bandwidth utilization has exceeded a predetermined level; and

taking an action to prevent the bandwidth utilization from exceeding a predetermined maximum bandwidth utilization.

33. (original) The method of claim 32, wherein taking an action to prevent the bandwidth utilization from exceeding a predetermined maximum bandwidth utilization comprises dropping packets.

34. (original) The method of claim 31, wherein obtaining additional bandwidth for a connection comprises:

monitoring bandwidth utilization on the connection;

determining that the bandwidth utilization has exceeded a predetermined level; and

obtaining additional bandwidth for the connection.

35. (original) The method of claim 31, wherein relinquishing unused bandwidth for a connection comprises:

monitoring bandwidth utilization on the connection;

determining that the bandwidth utilization is below a predetermined level; and

relinquishing excess bandwidth for the connection.

36. (original) The method of claim 31, wherein allocating bandwidth among multiple connections comprises:

monitoring bandwidth utilization on a number of connections;

identifying an over-utilized connection and an under-utilized connection; and

transferring traffic from the over-utilized connection to the underutilized connection.